

## **CHAPTER 6.0**

### **MITIGATION MEASURES AND PERMITS**

#### **6.1 MEASURES TO MINIMIZE ADVERSE IMPACTS AND MITIGATION FOR UNAVOIDABLE IMPACTS**

Section 101(b) of the National Environmental Policy Act (NEPA) requires that federal agencies incorporate into their project planning all practicable measures to mitigate adverse environmental impacts resulting from a proposed action.

The following section summarizes concept-level mitigation measures that have been identified as appropriate to minimize adverse environmental impacts for the alternatives under consideration. Agency coordination and contacts with individual property owners will continue throughout the engineering design phase of the project. During that time, mitigation measures will be developed in more detail. Final mitigation will be incorporated into the final engineering plans and specifications for this project.

##### **6.1.1 Traffic**

A traffic management plan will be developed and implemented to ensure reasonable access to residences, businesses, farm parcels, community services and local roads during construction. Both Alternatives 27 and 28 would be constructed on new alignment and should have minimal impact to existing traffic patterns during construction. Minor impacts will occur at various locations where the new alignment would tie into existing U.S. 231 and other major roads. Work will be staged to minimize disruption during the construction period. Lengthy detours to other routes will be minimized. To minimize delays to emergency vehicles, INDOT will coordinate construction activities, sequencing and traffic management plans with local fire, police and emergency rescue services.

##### **6.1.2 Farmland**

INDOT will work closely with all affected property owners and make every effort to provide acceptable access to the remainder of the property. INDOT may also make offers to purchase property remainders determined uneconomic to the owner. Access to local road networks will be restored to farm operations. Mitigation for impacts to farmland, especially access, will be determined on a case-by-case basis during the final design of the project.

##### **6.1.3 Acquisition/Relocation**

The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, provides for payment of just compensation for property acquired for a federal aid project. In addition to acquisition price, costs for the replacement dwelling, moving expenses, increased rental or mortgage payments, closing costs, and other valid relocation costs are covered. No person will be displaced unless a comparable or better replacement dwelling is provided. All of the above resources are available to all displaced persons without discrimination.

Before initiation of any property acquisition activities, property owners will be contacted to explain the details of the acquisition process. Any property acquired will be inspected by one or more professional appraisers. The property owner will be invited to accompany the appraiser during inspection of the property to ensure that its value is recognized in an appraisal. Based on the appraisal(s) made, the value of the property will be determined and that amount offered to the owner. The property owner may obtain

an independent appraisal. In the event agreement on the fair market value cannot be reached, the property owner will be advised promptly of the procedure to follow in making an appeal.

In addition to fair market value, costs for the business location, moving expenses, increased rental or mortgage payments and closing costs, the relocation program covers other valid relocation costs. No person will be displaced unless a comparable business location, or other compensation where a suitable replacement business location is not practicable, is provided. If difficulties are encountered in finding acceptable relocation opportunities, INDOT will extend the right of way acquisition period until relocation can be accomplished.

A need for special relocation advisory services is not anticipated because at this time there is no indication that any unusual problems exist on this project. A need for remedies for insufficient relocation housing is not anticipated because at this time there is no indication that there would not be sufficient housing available for the relocations for this project.

#### **6.1.4 Surface Water Resources**

The use of bridges rather than culverts allows streams to maintain a natural bottom, permits aquatic vegetation to grow, and provides a more varied gradient to facilitate movement of fish upstream. Bridge structures will be used at non-intermittent stream crossings where it is determined in consultation with the IDEM that use of a culvert would adversely impact sensitive aquatic habitat.

Construction in or near waterways and wetlands will be done in accordance with the Standard Specifications or Special Provisions to minimize erosion and sedimentation. Temporary and permanent erosion control methods may include silt fences, retention basins, detention ponds, interceptor ditches, seeding and sodding, riprap of exposed embankments, erosion mats, and mulching.

Structure sizing will be done in accordance with state and federal guidelines regarding floodplain encroachment and hydraulic capacity. Permanent retention facilities will be considered in areas adjacent to streams and wetlands such that roadway runoff will be intercepted before entering the waterway.

#### **6.1.5 Wetlands**

Presidential Executive Order 11990, Protection of Wetlands, requires all federal agencies to avoid, to the extent practicable, long- and short-term adverse impacts associated with the destruction or modification of wetlands. More specifically, the order directs agencies to avoid new construction in wetlands unless there is no practicable alternative and states that where wetlands cannot be avoided, the proposed action must include all practicable measures to minimize harm to wetlands.

Neither of the build alternatives entirely avoid wetlands. Wetland impacts will be minimized by utilizing the least amount of right-of-way possible for new construction. Wherever feasible, slight alignment shifts will be made during the design phase to minimize wetland impacts. Erosion control and maintenance of wetland hydrology during construction will be important in maintaining the integrity of adjacent wetlands. Water quality impacts from silt and sedimentation will be minimized through strict adherence to erosion control measures as required by INDOT's *Standard Specifications and Standard Drawings*. Wherever possible, construction activities will remain outside of adjacent wetlands to prevent soil compaction.

In areas where wetland loss cannot be avoided, wetland replacement will be pursued by either wetland restoration or wetland creation. Emergent wetlands are difficult to replace; however, numerous locations

in the project area are suitable for emergent wetland restoration or creation. Forested wetlands are among the most difficult wetlands to recreate for mitigation purposes, primarily because of the amount of time needed to develop mature woodland and the specific hydrologic regime required by forested wetlands. Potential forested wetland mitigation sites are found in the project area in the floodplains of the Patoka and Straight Rivers and Hunley Creek.

Estimated wetland mitigation hectares (acres) for each build alternative are:

- Alternative 27                      25 – 34 ha (62 – 84 ac)
- Alternative 28                      15 – 21 ha (37 – 53 ac)

Estimates were calculated using the mitigation ratios established in the Wetland Memorandum of Understanding signed by INDOT, IDNR and USFWS on January 28, 1991 (Appendix C). Low-range estimates were calculated by multiplying the emergent hectares (acres) by two and the forested hectares (acres) by three. High-range estimates were calculated by multiplying the emergent hectares (acres) by three and the forested hectares (acres) by four. These numbers were added together for a total number of estimated hectares (acres) required for each of the build alternatives.

In addition to the potential mitigation areas discussed above, the IDNR has indicated that they are looking for opportunities to expand both Buffalo Flats Nature Preserve and Wening-Sherrit Seep Springs Nature Preserve, and that these areas may provide possible mitigation opportunities for this project (see Comments and Coordination, Chapter 7.0). Enhancing existing wetlands by restoring or creating wetland in adjacent areas is an excellent way to improve existing wildlife habitat and improve the chances for success by developing a self-sustaining system requiring minimal intervention. Coordination with the IDNR and other resource agencies will continue as mitigation concepts are developed and once a Selected Alternative has been identified.

#### **6.1.6 Floodplains**

Presidential Executive Order 11988 requires federal agencies to avoid the long- and short-term adverse impacts associated with the occupancy and modification of floodplains, and to restore and preserve the natural and beneficial values served by floodplains. In implementing the Executive Order, it is FHWA's policy to:

- Encourage prevention of uneconomic, hazardous or incompatible use and development in the floodplain.
- Avoid longitudinal or other significant encroachments where practicable.
- Minimize impacts that adversely affect base floodplains.
- Restore and preserve the natural and beneficial floodplain values.
- Avoid support of incompatible floodplain development.
- Be consistent with the intent of the Standards and Criteria of the National Flood Insurance Program and local floodplain management.

Both build alternatives involve encroachment in the floodplain of the Patoka River and several of its major tributaries. The alternatives are not expected to raise the base flood elevation of the regional (100-year) flood by more than a maximum of 0.05 m (0.15 ft). The principle mitigation measures are those which reduce the potential for interruption of a transportation facility needed for emergency vehicles of evacuation; reduce potential risk of property loss or hazard to life; and preserve or restore natural and beneficial floodplain values.

The proposed highway will be designed to have adequate freeboard to prevent encroachment of water on the pavement in the regional (100-year) flood event. The improvement will enhance capability for emergency vehicle response.

Dubois County regulates development in the floodplain, and the applicable local floodplain ordinance is in compliance with Indiana Floodplain Management Act IC 14-28-1 and -3. The purpose of the floodplain regulation is to protect human life, health, and to minimize property damage and economic loss. The proposed improvement is consistent with floodway development standards provided that amendments are made to the official floodway lines, regional flood profile and floodplain zoning maps, and provided that the local unit of government agrees to such changes. INDOT will complete the required analysis to revise the regulated floodplain in accordance with the criteria in Indiana Floodplain Management Act IC 14-28-3 during final design and prior to construction of the facility. INDOT will coordinate with the Federal Emergency Management Agency, IDNR and Dubois County to obtain permission to revise the regulated floodplain and to complete the required revision.

Economic loss as a result of floodplain impacts on croplands can be mitigated by compensation to riparian property owners for flowage easements. These easements would cover lands which are not currently inundated by the regional flood but which would be within the revised floodplain.

Natural and beneficial floodplain values associated with wetlands will be mitigated. Wetlands are discussed separately in Section 6.1.5.

#### **6.1.7 Threatened and Endangered Species**

Alternative 27 passes close to Buffalo Flats Nature Preserve which is home to two state endangered species, the western cottonmouth (*Agkistrodon piscivorus*) and the copperbelly watersnake (*Nerodia erythrogaster neglecta*). While Alternative 27 would not directly impact known habitat for either species, the proximity of the new roadway to known habitat could potentially directly impact both species by blocking potential travel corridors and increasing opportunities for the snakes to be hit on the road. In addition, both species could be impacted indirectly by future development at the U.S. 231/Kellerville Road intersection.

Therefore, in an effort to minimize and mitigate for potential impacts to the two snake species and to limit future development in the vicinity of Buffalo Flats, if Alternative 27 is chosen as the Selected Alternative INDOT will purchase approximately 14.6 ha (36.1 ac) of additional limited access right-of-way at the U.S. 231/Kellerville Road intersection, west of the new roadway, to act as a buffer between the road and Buffalo Flats Nature Preserve (Plate 12A; Appendix A). In addition, wherever possible, efforts will be made to minimize impacts at the Patoka River crossing south of Kellerville Road.

Efforts were made to minimize impacts to Indiana bats by avoiding woodlands where possible. Where avoidance was not possible, attempts were made to locate the alternatives so that impacts occurred on the edge of the woodlands, thereby minimizing the impact. For unavoidable woodland impacts, USFWS has determined that neither of the build alternatives would result in an adverse impact to the Indiana bat if seasonal tree clearing is implemented (Appendix D, p. D-85).

#### **6.1.8 Forests**

INDOT will consult with appropriate resource agencies regarding forest mitigation measures.

### **6.1.9 Upland Habitat and Wildlife**

Minimizing wildlife habitat impacts was considered in development of all alternatives. Attempts were made to avoid wooded and wetland areas. Where wooded areas were not avoidable, fragmenting of woodlands was minimized. Where wetland areas were not avoidable, wildlife habitat will be considered when selecting the wetland mitigation site.

### **6.1.10 Natural and Conservancy Areas**

Once a Selected Alternative is identified, adjustments of the horizontal alignment and grade during the design phase of the project may be possible to further reduce the area impacted by construction. Two nature preserves, Buffalo Flats and Wening-Sheritt Seep Springs, will be completely avoided by both build alternatives. Efforts will be made wherever possible to minimize indirect impacts to these sensitive areas.

### **6.1.11 Archaeological Resources**

Once a Selected Alternative has been identified, Phase I and Phase II (if necessary) archaeological studies will be conducted to determine if potentially impacted sites are eligible for the National Register of Historic Places (NRHP). If a site is found to be eligible for the NRHP, efforts will be made to avoid the site. If avoidance is not prudent, further coordination will be carried out with the SHPO prior to the Final EIS to develop agreement on an appropriate data recovery plan and any additional mitigation measures. Coordination and consultation with the SHPO is currently ongoing. All Section 106 requirements will be fulfilled prior to the submittal of a Final EIS for this project.

### **6.1.12 Air Quality**

The project area meets national and state air pollution attainment criteria. Therefore, no transportation control measures apply to the project area.

Fugitive dust from the project will be prevented in compliance with IAC 6-4, Fugitive Dust Rule 326. Dust control during construction would be accomplished in accordance with the INDOT's Standard Specifications, which require the application of water or other dust control measures during grading operations and on haul roads to minimize the dispersion of dust. The Standard Specifications also require all vehicles hauling materials to or from the site to use appropriate measures, including covers or protective devices, to prevent dust dispersion.

The location and operation of concrete batch plants and asphaltic batch plants will be in accordance with the Standard Specifications and any Special Provisions developed during coordination with the DNR regarding air quality standards and emissions.

### **6.1.13 Noise**

#### **6.1.13.1 Traffic Noise**

As stated in Section 5.2.13.4, traffic noise impacts are expected to be very minor. Noise abatement measures are not proposed as part of this project.

#### **6.1.13.2 Construction Noise**

To reduce the potential impact of construction noise, the Special Provisions for this project will require that motorized equipment shall be operated in compliance with all applicable local, state and federal laws and regulations relating to noise levels permissible within and adjacent to the project construction site. All motorized construction equipment will be required to have mufflers constructed in accordance with the equipment manufacturer's specifications or a system of equivalent noise-reducing capacity, maintained in good operating condition. In addition, special provisions in the contract will require the contractor to make every effort reasonable to minimize noise by selecting construction methods, work-hour controls, muffler maintenance, selection of haul routes, and enforcement of operations in ways that are considerate of residences, such as minimizing tailgate banging and using portable noise shields in selected areas.

#### **6.1.14 Context Sensitive Solutions**

It is the policy of the Indiana Department of Transportation (INDOT) to incorporate context sensitive solutions into the development, construction and maintenance process for improvements to the state jurisdictional transportation system. The process for incorporating context sensitive solutions is intended to establish a basis for the development, construction and maintenance process to incorporate a community's character and desires in transportation improvements. The context sensitive solution process is intended to be a flexible approach in allowing the latitude to enhance environmental, scenic, historic and unique community elements in a transportation improvement. INDOT believes that the implementation of context sensitive solutions will allow transportation officials with input from community stakeholders to strike a balance between providing safe, cost-effective and efficient highway facilities while protecting and enhancing community values.

The establishment of context sensitive solutions incorporates accepted effective design practices. Context sensitive solutions allow ideas, such as the preservation of historic places, scenic and natural environmental enhancement, and community values, to be considered within the objectives of mobility, safety and economics.

#### **6.1.15 Borrow and Disposal**

Selection of any material borrow sites will be the responsibility of the construction contractor subject to approval by INDOT. It is anticipated that borrow material will be obtained locally from existing sites. Unusable excavated material will be disposed of by the contractor in accordance with the Standard Specifications or Special Provisions to ensure protection of wetlands and waterways.

Consideration will be given during the design phase to the use of clean construction/demolition debris and/or recycled rubber tire materials to the extent feasible in project implementation.

All waste and demolition material from project construction activities which cannot be reused in the project will be disposed of in accordance with the Standard Specifications or Special Provisions to ensure protection of wetlands and waterways.

## **6.2 PERMITS**

Each of the U.S. 231 build alternatives will impact numerous waterways. Permits that will be required include: the United States Army Corps of Engineers' (USACE) Section 404 and Section 10 Permit; Section 401 Water Quality Certification (WQC) from the Indiana Department of Environmental Management (IDEM); Construction in a Floodway Permit from the Indiana Department of Natural Resources (IDNR); IDEM National Pollution Discharge Elimination System (NPDES); and a Rule 5 permit.

The Section 404 permit and Section 401 WQC permit are authorized under the Federal Clean Water Act (CWA), and the decisions are subject to the state of Indiana's water quality standards under IAC Title 327 of the Water Pollution Control Board (WPCB). IDNR will also require permit approvals for floodplain impacts under the state of Indiana's Flood Control Act IC 14-28-1 and Navigable Waterways Act IC 14-29-1. Rule 5 of the National Pollution Discharge Elimination System (NPDES) regulates contaminant discharge via storm water runoff. The Rivers and Harbors Act of 1899 authorized regulation of navigable waters of the United States pertaining to bridge crossings and dredging and filling respectively.

All necessary permits will be applied for and obtained prior to the construction of this project and the terms and conditions of these permits will be adhered to during the construction.

### **6.2.1 Section 404 and Section 10 Permit**

For the projects involving excavation and/or discharges of dredged or fill material into waters of the U.S. or placement of structures or any activity that disturbs soil/sediments below the ordinary high water mark of a navigable waterway, and not authorized under either a general or a nationwide permit, and Individual U.S. Army Corps of Engineer's Section 404/Section 10 Permit or letter of permission must be obtained prior to the commencement of construction. Section 404/Section 10 Permits will be applied for during the design phase of the project.

### **6.2.2 Section 401 Water Quality Certification**

The Section 401 Water Quality Certification is a state's review of applications for Section 404 U.S. Army Corps of Engineer's permits for compliance with water quality standards. Any activity involving dredging, excavation or filling within waters of the United States may need a Section 401 Water Quality Certification. The IDEM is responsible for the Section 401 Water Quality Certifications review process in Indiana. Section 401 Water Quality Certifications will be applied for during the design phase of the U.S. 231 project.

While the USACE 404 permit concerns broad national waterway issues, the IDEM review focuses on how the project may impact the water quality of the waters of the United States as applied under the Clean Water Act within the jurisdiction of Indiana's water quality standards under IAC 327. Indiana's water quality standards have been reviewed and approved by the United States Environmental Protection Agency who maintains oversight of the IDEM's approvals of 401 water quality certifications. The IDEM review of water quality impacts, while focusing primarily on wetland impacts, also must include a review of the physical, biological and chemical impacts to the water quality.

### **6.2.3 Construction Within a Floodway Permit**

The Flood Control Act (IC 14-28-1) requires that any persons proposing to construct a structure, place fill or excavate material at a site located within a floodway of any river or stream, unless that activity is exempted, must obtain the written approval of the Indiana Department of Natural Resources (DNR) prior to initiating the activity. This law was originally enacted to protect Indiana citizens from the loss of lives and property caused by floods, and ensure that floodway channels are not inhabited and kept free and clear of interference or obstruction that will result in undue restriction to the capacity of the floodway. Since then, it has been expanded to protect Indiana's natural resources located in the floodway. Construction in a Floodway Permit(s) will be applied for during the design phase of the project.

The IDNR has the jurisdictional responsibility within the state of Indiana for approving any construction within a floodway or navigable waterway under Indiana Code 14. The proposed U.S. 231 roadway will cross several streams and rivers, requiring approval of construction within a floodway and a navigable waterway (Patoka River).

### **6.2.4 National Pollutant Discharge Elimination System Permit**

Water pollution degrades surface waters, making them unsafe for drinking, fishing, swimming and other activities. As authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Point sources are discrete conveyances such as pipes or man-made ditches. Individual homes that are connected to a municipal system, use a septic system or do not have a surface discharge do not need an NPDES permit; however, industrial, municipal and other facilities must obtain permits if their discharges go directly to surface waters. Since its introduction in 1972, the NPDES permit program is responsible for significant improvements to our Nation's water quality.

### **6.2.5 Erosion Control**

The requirement of Rule 5 (327 IAC 15-5) applies to all persons who are involved in construction activities that result in the disturbance of 2 ha (5 ac) or more of total land area. Contractors disturbing more than 2 ha (5 ac) of land from a non-commercial borrow site are also required to comply with Rule 5. IDEM is the agency that governs over Rule 5.

The erosion control plan is developed during the design phase. This plan, after being filed and reviewed by the appropriate Soil and Water Conservation District, is incorporated into the plans and is included in the contract documents. A Notice of Intent is submitted to IDEM.